Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

In The Claims:

1. (Currently Amended) A molten bath testing probe comprising:

a one-piece steel body having a pair of integrally formed open, empty receptacles in said body, neither of which contains a reference material or test sample, ~~for~~ before submersing into a molten aluminum smelting bath material, ~~and~~ for holding solely a sample of the molten material in each receptacle;

a temperature sensor received in each said receptacle; and

an analyzer in communication with said temperature sensors for determining a difference between the temperature of the samples of molten material in each of the receptacles when the receptacles are submersed and the temperature at which the samples of the molten material begins to solidify after the body is removed from the bath, where the probe is reusable, said one-piece steel body allowing reheat of any sample held in the receptacles to allow sample removal from the receptacles.

2. (Original) The molten bath testing probe of claim 1, wherein said body comprises a central portion, said sample receptacles being positioned on opposing sides of said central portion.

3. (Original) The molten bath testing probe of claim 1, wherein each said temperature sensor comprises a thermocouple extending into an interior of said receptacle.

4. (Original) The molten bath testing probe of claim 3, wherein said thermocouples each comprise a calibrated K-type thermocouple.

5. (Previously Presented) The molten bath testing probe of claim 1, wherein said body is 304 L alloy stainless steel.

6. (Canceled)

7. (Currently Amended) The molten bath testing probe of claim ~~6~~ 1, wherein said analyzer comprises means for determining freezing temperature of the bath.

8. (Original) The molten bath testing probe of claim 7, wherein said analyzer comprises means for determining superheat of the bath.

9. (Canceled)

10. (Canceled)

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Currently Amended) A molten material testing probe made of ~~comprising~~:

a one-piece steel body for submersing into a molten aluminum smelting bath material, with an open, empty sample receptacle for holding a sample of the molten material after submersion, and a reference member which is the one-piece steel body, wherein said receptacle and said reference member are integrally formed in said body from steel, in one-piece, where the steel is a stainless steel which does not undergo a phase change during operation of the probe, and during cooling, and the open receptacle does not contain a reference material or test sample before submersion;

a sample temperature sensor received in said open receptacle;

a reference temperature sensor contacting said reference member; and

an analyzer in communication with said sample temperature sensor and said reference temperature sensor for determining a difference between a temperature of any molten material in the receptacle after submersion and a temperature of the reference member, the analyzer comprising means for determining whether the bath meets predetermined specifications of the concentration of alumina, the ratio of the amount of aluminum fluoride to the amount of sodium fluoride, and bath superheat.

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Previously Presented) The probe of claim 16, wherein each said temperature sensor comprises a thermocouple, the steel is 304 L alloy stainless steel, and the probe is reusable, said one-piece steel body allowing reheat of any sample to allow sample removal.

21. (Original) The probe of claim 20, wherein said thermocouples are calibrated K-type thermocouples.

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)